

(43) Date of A Publication 21.08.2002

(21) Application No 0023711.5

(22) Date of Filing 27.09.2000

(71) Applicant(s)
Easymaterial.com Limited
(Incorporated in the United Kingdom)
Meares House, 194-196 Finchley Road, LONDON,
NW3 6BX, United Kingdom

(72) Inventor(s)
Majid Jahanshahi

(74) Agent and/or Address for Service
Boulton Tennant
Verulam Gardens, 70 Gray's Inn Road, LONDON,
WC1X 8BT, United Kingdom

(51) INT CL⁷
G06F 17/60

(52) UK CL (Edition T)
G4A AUXF

(56) Documents Cited
WO 2001/055928 A1

(58) Field of Search
UK CL (Edition T) G4A AUXF
INT CL⁷ G06F 17/00 17/60
Online:WPI, EPODOC, JAPIO

(54) Abstract Title
Electronic product trading

(57) A central server (10) facilitates trading in building/construction materials, is accessible by a plurality of clients (40-48) via the Internet, and is connected with a plurality of transaction servers (50-58). Each transaction server connects via a corresponding one or more intermediary servers (70-80), using a private line connection (130-136), to a database (110-120) which is maintained with a stock list of building and/or construction materials for a particular supplier. Each supplier database (110-120) updates a central database (20) local to the central server (10) via the private line connection (130-136) with that supplier's current stock. The central database (20) employs a 'pocketed' structure which increases data access speed.

Each client (40-48) accessing the central server (10) is provided with a menu arranged in a specific manner for ease of product searching. Results of the search are displayed according to user defined criteria such as proximity of supplier, ability to deliver and so forth.

FIG. 1.

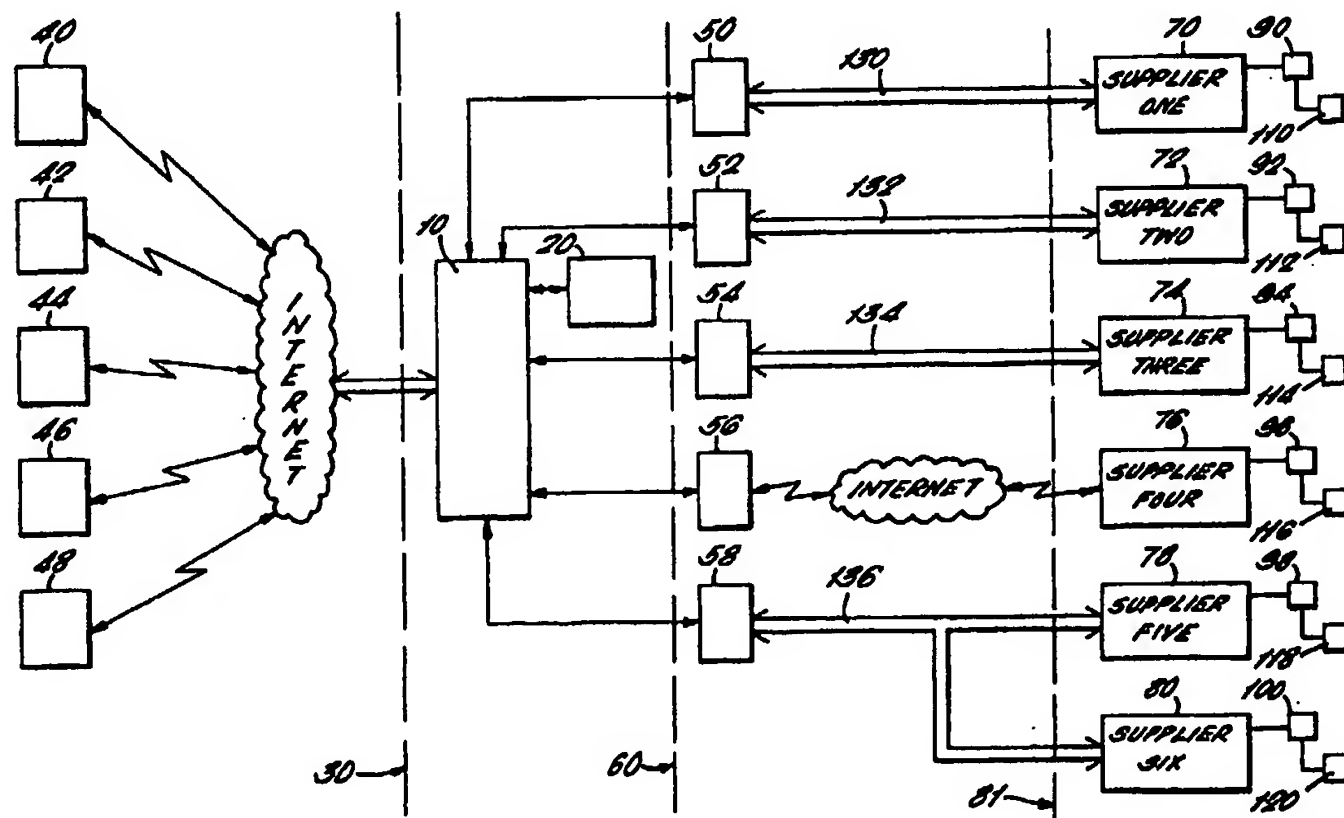


FIG. 1

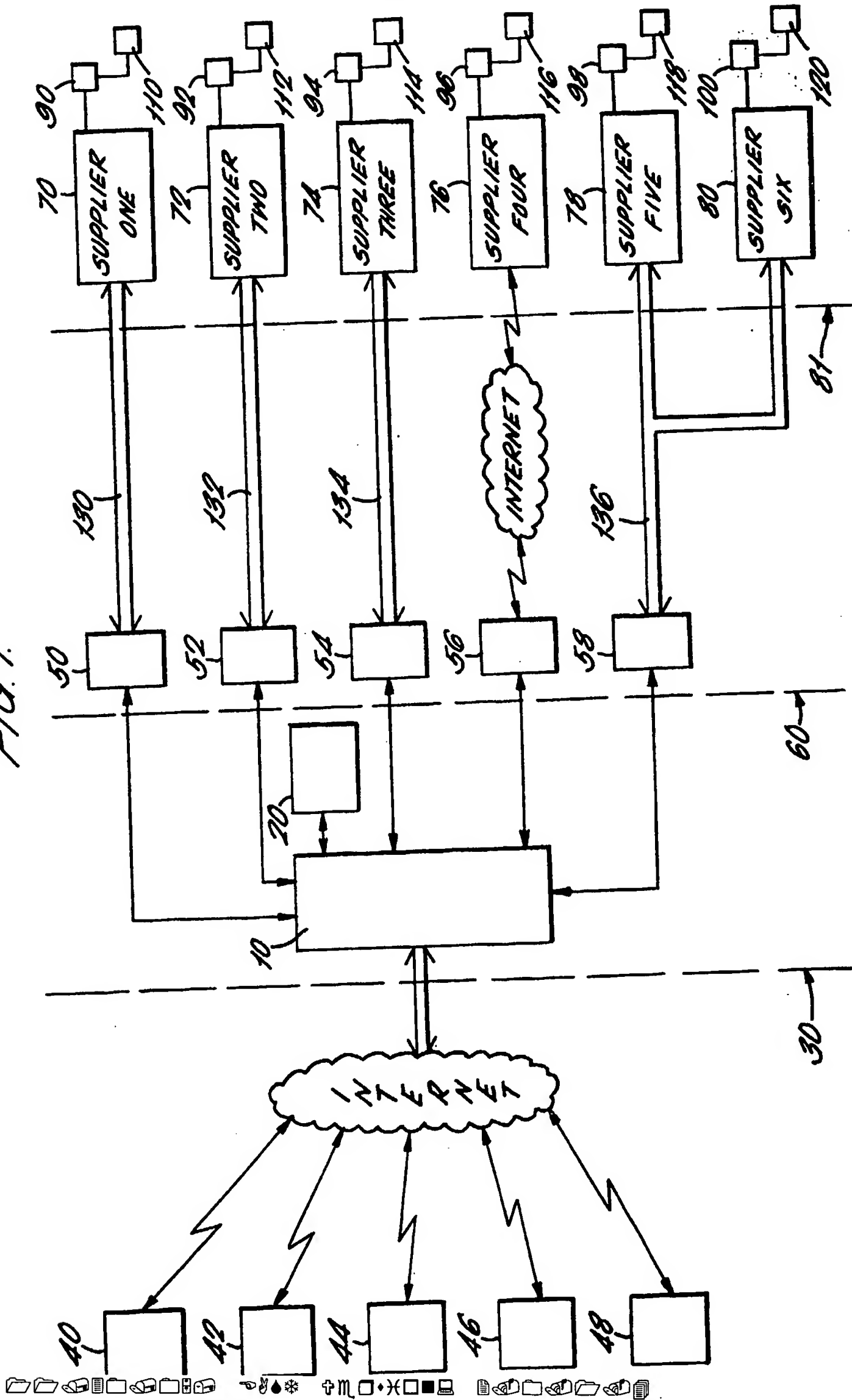
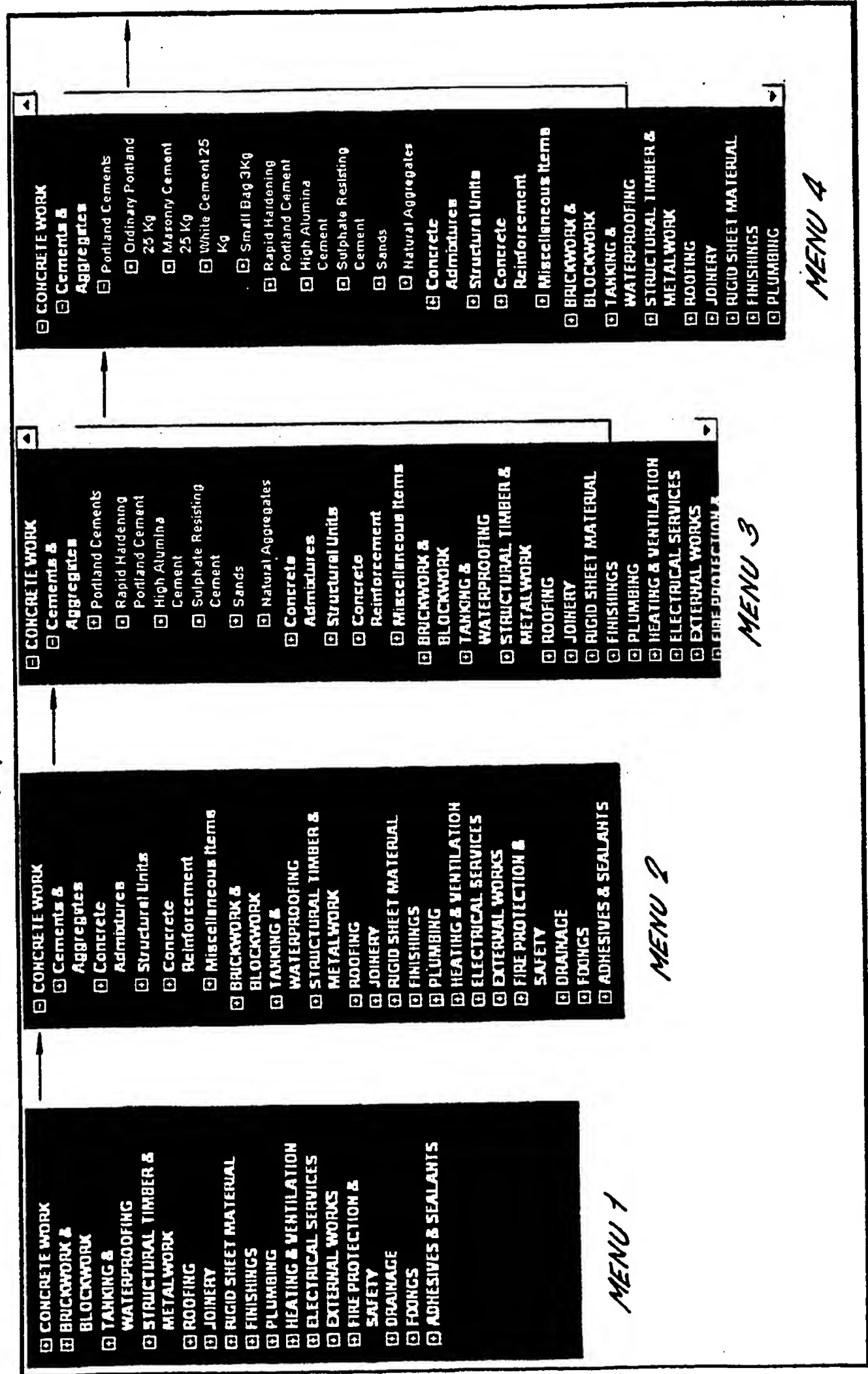


FIG. 2.



7

 FIRE PROTECTION & SAFETY

Supplier Two	Ordinary Portland Cement	£2.21	1	200
2138-69C	25Kg			
Supplier Three	Ordinary Portland Cement-Castle	£2.34	1	210
7685opc	24Kg			
Supplier One	Castle Multichem	£2.49	1	
623985	25Kg			
Supplier One	Masonry Cement	£2.49	1	
623986	25Kg			
Supplier One	Ordinary Portland Cement	£2.49	1	
623987	25Kg			
Supplier One	Rugby Special Improved OPC	£2.49	1	
623988	25Kg			
Supplier Three	Masonry Cement	£2.56	1	
7686opc	25Kg			
Supplier Four	Ordinary Portland Cement	£2.73	1	
C75964-11	25Kg			

FIG. 4.

easyMaterial.com

home

categories

item:

CONCRETE WORK

Cements & Aggregates

Portland Cements

Ordinary Portland 25 kg

Masonry Cement 25 kg

White Cement 25 kg

Small Bag 31-g

Rapid Hardening Portland Cement

High Alumina Cement

Sulphate Resisting Cement

Sands

Natural Aggregates

Concrete Admixtures

Structural Units

Concrete Reinforcement

Miscellaneous Items

BRICKWORK & BLOCKWORK

TANKING & WATERPROOFING

STRUCTURAL TIMBER & METALWORK

ROOFING

JOINERY

RIGID SHEET MATERIAL

FINISHINGS

PLUMBING

HEATING & VENTILATION

ELECTRICAL SERVICES

EXTERNAL WORKS

FIRE PROTECTION & SAFETY

Contents of Tom Raw's Shopping Cart - easyMaterial.com - Microsoft Internet ...

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail

Address http://www.easyMaterial.com/mycart.php4 Go Links

Contents of Tom Raw's shopping Cart:

Supplier	Code	Item	Cost Each	Quantity	Sub Total	
Supplier One	2318-69C	Ordinary Portland Cement	£2.21	10	£22.10	
Supplier One	2234-05R	Ecoseal BP DPC	£14.40	6	86.40	
Total of order:						£108.50
VAT at 17.5% (If applicable)						£17.99
Total Including VAT (If applicable)						£127.49

Supplier	Code	Item	Cost Each	Quantity	Sub Total	
Supplier Three	1715301	Tilcon Class B Engineering	£215.00	5	£1075.00	
Total of order:						£1075.00
VAT at 17.5% (If applicable)						£188.13
Total Including VAT (If applicable)						£1263.13

Update

Shop Checkout

FIG. 5a.

easyMaterial.com

item:

CONCRETE WORK

☐ Cements & Aggregates

☐ Portland Cement

☐ Ordinary Portland 25 kg

☐ Mortar Cement 25 kg

☐ White Cement 25 kg

☐ Small Bag 5kg

☐ Rapid Hardening Portland Cement

☐ High Alumina Cement

☐ Sulphate Resisting Cement

☐ Sands

☐ Natural Aggregates

☐ Concrete Admixtures

☐ Structural Units

☐ Concrete Reinforcement

☐ Miscellaneous Items

☐ BRICKWORK & BLOCKWORK

☐ TANKING & WATERPROOFING

☐ STRUCTURAL TIMBER & METALWORK

☐ ROOFING

☐ JOINERY

☐ RIGID SHEET MATERIAL

☐ FINISHINGS

☐ PLUMBING

☐ HEATING & VENTILATION

☐ ELECTRICAL SERVICES

☐ EXTERNAL WORKS

☐ FIRE PROTECTION & SAFETY

Sup

2

Sup

7

Sup

6

Sup

6

Sup

6

Sup

7

Sup

c7

Invoice Address

Name

Tom Raw

Address

123 My Road

My City

Post Code

MC12 6GY

Telephone

020 8123 4567

Delivery Address

Name

Tom Raw

Address

321 Project Road

My City

Post Code

MC15 9IJ

Telephone

020 7987 6543

Please enter your preferred delivery date.

13

August

2000

You have trade accounts with the following suppliers;
Supplier One, Supplier Three

Would you like to place your order onto the account
or pay by alternative means.

☐ Place order of £127.49 on Trade Account with Supplier One

☒ Place order of £1263.13 on Trade Account with Supplier Three

If you do not wish to pay using your trade account please fill in the credit/debit card details below.

Card Holders Name

T Raw

Card Type

Visa

Card Number

1234 5678 9123 4567

5/7

FIG. 5b.

6/7

easyMaterial.com

item:

CONCRETE WORK

Cements & Aggregates

- ☐ Portland Cement
- ☐ Ordinary Portland 25 Kg
- ☐ Masonry Cement 25 Kg
- ☐ White Cement 25 Kg
- ☐ Small Bag Jiffy
- ☐ Rapid Hardening Portland Cement
- ☐ High Alumina Cement
- ☐ Sulfate Resisting Cement
- ☐ Sands
- ☐ Natural Aggregates

Concrete Admixtures

Structural Units

Concrete Reinforcement

Miscellaneous Items

- ☐ BRICKWORK & BLOCKWORK
- ☐ TANKING & WATERPROOFING
- ☐ STRUCTURAL TIMBER & METALWORK

- ☐ ROOFING
- ☐ JOINERY

RIGID SHEET MATERIAL

- ☐ FINISHINGS
- ☐ PLUMBING
- ☐ HEATING & VENTILATION
- ☐ ELECTRICAL SERVICES
- ☐ EXTERNAL WORKS
- ☐ FIRE PROTECTION & SAFETY

Delivery Date: 13 August 2000

Payment Method: Visa Credit Card

No: 1234 5678 9123 4567 Exp: 11/2002

Supplier	Code	Item	Cost Each	Quantity	Stock	Sub Total
Supplier One	2138-69C	Ordinary Portland Cement	£2.21	10	OK	£22.10
Supplier One	2234-05R	EcoSeal BP DPC	£14.40	6	OK	£86.40
Total of order:						
VAT at 17.5% (If applicable)						
Total Including VAT (If applicable)						

Confirm Order With Supplier One ☒

Supplier Three

Delivery Date: 13 August 2000

Payment Method: Trade Account

Account No: T123R456A8910

Supplier	Code	Item	Cost Each	Quantity	Stock	Sub Total
Supplier Three	1715301	Tilcon Class B Engineering	£215.00	5	OK	£1075.00
Total of order:						
VAT at 17.5% (If applicable)						
Total Including VAT (If applicable)						

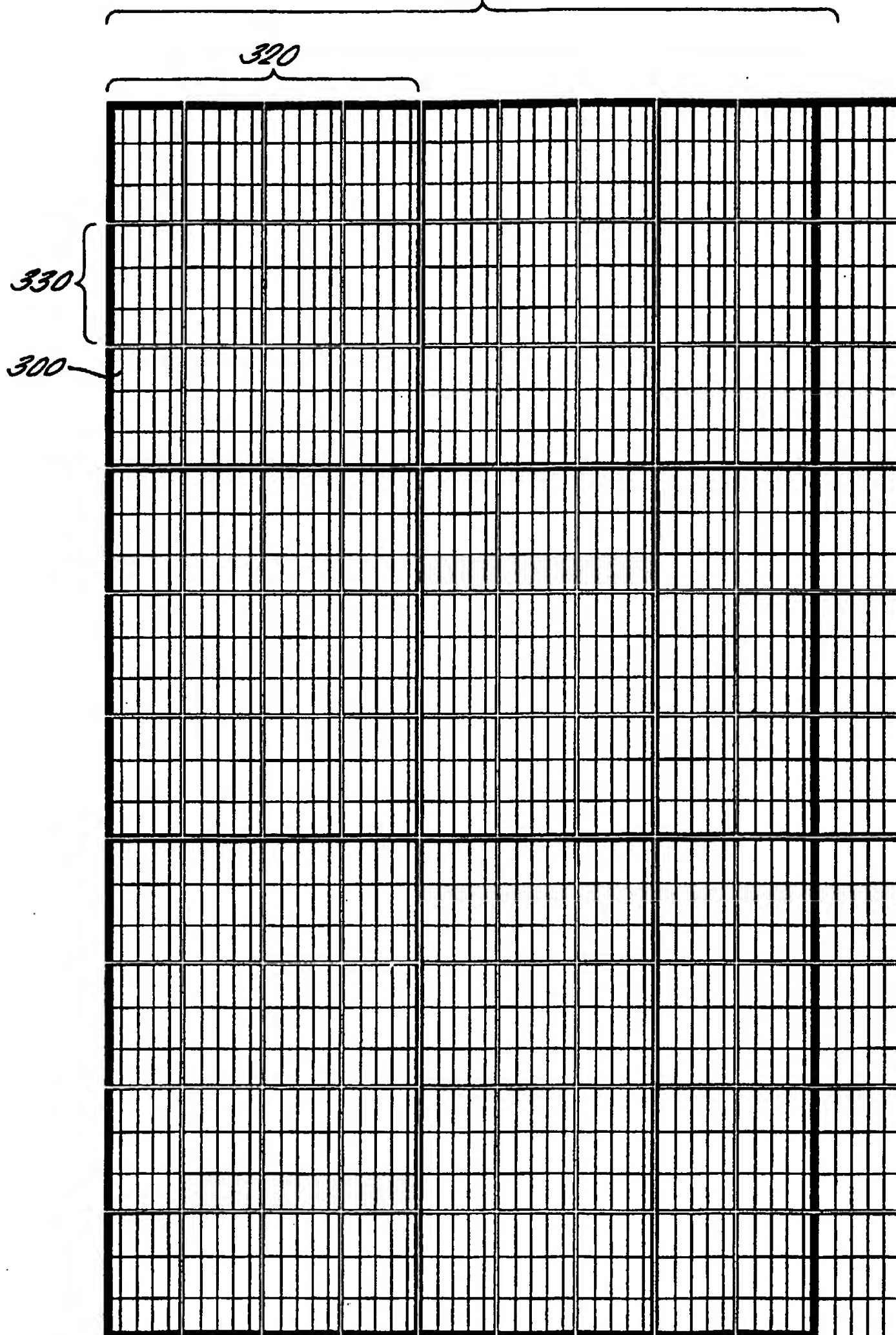
Confirm Order With Supplier Three ☒

Buy

1/7

FIG. 6.

310



SYSTEM AND METHOD FOR ELECTRONIC PRODUCT TRADING**Field of the Invention**

5 This invention relates to a system and a method
for the electronic trading of products, in particular
construction and building materials.

Background of the Invention

10 Large quantities of building and construction
materials are purchased annually by the construction
industry. At each stage in the construction of
property, a range of different products must be
obtained, often from a variety of different suppliers.
It is also necessary that any supplier which is
15 approached for a given product is capable of meeting
maximum delivery times and can offer the product at a
competitive price.

Traditionally, goods have been purchased by
issuing a tender to various suppliers, and waiting for
20 each supplier to reply to the tender before choosing
the appropriate supplier on the basis of product
availability or cost. There are several drawbacks with
this. The purchaser needs to have a detailed market
knowledge if he or she is to ensure that a tender is
25 offered to all potentially suitable suppliers. Often
this requires that the services of a site manager or
architect are retained. Moreover, the time taken to
respond to written tenders means that, at each stage
of the building process, forward planning is essential
30 if delays in construction are to be avoided.

With the advent of electronic mail, the time
taken to complete the tender process has been reduced.
Some builders merchants also offer a web site
advertising their products. Nevertheless, the location
35 and purchasing of building and construction materials
at an optimum price is still a time-consuming and
expensive exercise.

It is an object of the present invention to provide both a system and a method allowing building and construction materials to be sourced and purchased more rapidly than has to date been possible.

5

Summary of Invention

According to a first aspect of the present invention, there is provided a method of facilitating the purchase of building/construction materials, comprising the steps of: storing on data storage means, for each of a plurality of suppliers of building/construction materials, at least one purchasing parameter set including at least one purchasing parameter selected from the list comprising availability, physical proximity, delivery time, and price, and relating to one or more specific building/construction materials; accessing, from a remote location, the said data storage means, via a central server in communication with the said data storage means; obtaining, at the remote location, an array of information including the or each purchasing parameter set supplied by the plurality of suppliers and relating to at least one of the specific materials; and comparing, at the remote location, equivalent purchasing parameters, provided by different suppliers for a given specific material, and obtained from the data storage means via the central server, so as to allow purchase of that given specific material from the supplier or those suppliers for which one or more purchasing parameters in a purchasing parameter set are considered most favourable.

35 The method of the present invention allows customers, both private and trade, simultaneously to compare prices, delivery times, availability and so forth of different suppliers and execute transactions with them, thus allowing the terms of purchase to be

optimised without the need for the lengthy tendering process. Moreover, the central server facilitates the transfer of information between a potential customer and a limitless number of suppliers. Particularly for private purchasers, the server and database structure allows them to identify building/construction materials to be purchased and they will then receive information from local suppliers which they may not even have been aware of.

10 In one preferred embodiment, the data storage
means is a database, such as a relational database,
which is local to the central server. This arrangement
provides for rapid provision of desired information to
customers at remote locations. The drawback, however,
15 is that the local database needs to be updated by
suppliers on a regular basis.

Particularly for trade customers, where suppliers may provide bulk discounts, it may become impractical to maintain all of the information on a central database local to the server. In that case, preferably, the data storage means may additionally or alternatively comprise a plurality of databases each local to a respective supplier. Nowadays, almost every supplier maintains their own database of available stock, prices, and so forth to allow rapid dealing with personal callers or telephone enquiries. The arrangement of the preferred embodiment routes enquiries from a customer, via the central server, to the various suppliers' databases. The particular manner in which the central server routes enquiries to the various suppliers' databases forms an important preferred feature of the present invention. The method, in particular, may further comprise providing a library of software applications, each application, when executed, permitting the routing of a request from the remote user to at least one of the plurality of suppliers. Employing a library of software

applications is advantageous because it optimises the speed of connection between the remote user and the suppliers' database. Potentially, thousands of suppliers' servers may be accessed, and each server may have physically different hardware and run different operating systems. If every supplier server were different, then the central server would otherwise require a program including code to connect to each and every single server. Such a program would be enormous and would take a very long time to execute.

Realistically, a single remote user would only require to connect to perhaps five supplier servers, assuming they wish to restrict their search to suppliers in the geographically local area. Using libraries allows each individual copy of the program which manages the connection between the central server and the suppliers' server to streamline itself for the user's requirements. In particular, the preferred step of accessing the data storage means from the remote location may include the steps of: accessing the central server from the remote location; identifying the specific material for which the said purchasing parameter set is to be obtained; selecting from the library of software applications, those applications which when executed will permit routing of a request from the remote user only to a selected subset of the totality of available suppliers; executing those selected software applications in response to a request, from the remote location, for information from one or more of the chosen subset of suppliers; and connecting the central server to the database that is local to the or each supplier in the chosen subset, so as to permit the said array of information to be obtained.

Most preferably, the or each of the chosen subset of suppliers may have a supplier server remote from

the central server, and the central server may be in communication with a plurality of transaction servers local thereto. In that case, the step of accessing the said storage means may further comprise: routing a request for information regarding a specific building/construction material from a remote location, via the central server, to one of the transaction servers; validating the said request at that transaction server; securely connecting between the said transaction server and the remote supplier server; and routing the request to the said remote supplier server.

In accordance with another preferred aspect of the present invention, the method may further
15 comprise: displaying, at the remote location, a menu of a plurality of different building/construction materials; selecting from that menu, at the remote location, a specific one of the different building/construction materials; and displaying at the
20 remote location the purchasing parameter set supplied by the plurality of suppliers and relating to the specific material selected from the menu.

Providing the information in the form of a menu, and, most preferably, a tree structure, allows customers, and especially D-I-Y customers, to locate the building/construction material of interest rapidly and intuitively. In one embodiment, the method may further comprise: selecting at the remote location and from a top level menu, a general category of building/construction materials of interest from a range of available categories; displaying a range of specific materials each belonging to the selected general category; and selecting the given specific material from the range of specific materials so as to permit the said step of comparing the equivalent purchasing parameters for that given specific material.

It may be desirable to employ a cascading tree structure to search for building/construction materials when a large number of materials are offered. Preferably, therefore, the method further comprises: selecting, at the remote location and from a top level menu, a general category of building/construction materials of general interest from a range of categories; displaying a lower level menu of sub-categories of building/construction materials relating to the selected general category in the top level menu; selecting, from the lower level menu, a sub-category of building/construction materials of interest; displaying a range of specific materials each belonging to the selected sub-category previously displayed as part of the lower level menu; and selecting the given specific material of interest from the range of specific materials so as to permit the said step of comparing the equivalent purchasing parameters for that given specific material.

Alternatively, the method may further comprise: selecting, at the remote location and from a top level menu, a general category of building/construction materials of interest from a range of available categories; displaying, consecutively and in accordance with user selection, a plurality of lower level menus of increasingly specific sub-categories of building/construction materials relating to the selected category in the top-level menu; displaying a range of specific materials each belonging to the most specific of the user selected sub-categories previously displayed in the lowest of the plurality of lower level menus; and selecting the given specific material of interest from the range of specific materials so as to permit the said step of comparing the equivalent purchasing parameters for that given specific material.

In the presently preferred embodiment, up to

5

10

25

30

plurality of pockets within the said multidimensional database in accordance with the chosen appropriate general category; and storing an identifier for each specific building/construction material so allocated in the database, along with the or each purchasing parameter associated with that specific building/construction material.

10 In that case, in a particular database pocket, each specific building/construction material may be allocated in the database to a chosen one of a further plurality of sub-pockets containing data on sub-categories of building/construction materials, each sub-category being more specific than the general category to which it belongs.

15 The advantage of using a "pocketed" relational
database is that it may be searched significantly more
rapidly than a standard multi-dimensional relational
database. This is because the time taken to search a
20 database increases as the exponent of its size, and by
creating a database with pockets, a plurality of
separate databases are, in effect, generated. Thus,
the pocketed database structure is significantly
quicker to search.

In accordance with a second aspect of the present invention, there is provided a computer system for facilitating the purchase of building/construction materials, comprising: a data storage means, upon which is stored at least one purchasing parameter set including at least one purchasing parameter selected from the list comprising availability, physical proximity, delivery time, and price, for each of a plurality of suppliers of building/construction materials, and relating to one or more specific building/construction materials; and a central server in communication with the data storage means, the central server being configured to receive a request from a remote user for information from a purchasing

10

15

20

Brief Description of the Drawings

25

30

35

Figure 3 shows a screen shot of the results of a search, as displayed to the user, for a particular

building/construction material selected from the menu of Figure 2;

Figure 4 shows a screen shot of the materials selected from a purchase by the user having reviewed the search results as shown in Figure 3;

Figures 5a and 5b show screen shots of a payment/delivery screen and an order confirmation screen respectively, for the purchasing of the material selected and as shown in Figure 4; and

10 Figure 6 shows a database structure for storing information on building/construction material.

Detailed Description of a Preferred Embodiment

Referring first to Figure 1, a computer system
15 embodying an aspect of the present invention is shown.
The computer system comprises a central server 10
which, in the currently preferred embodiment is a Dual
Zion processor system running Red Hat Linux, Qmail,
apache and Modssi with 1Gb Ram. Apache has been
20 configured to use PHP4 which is optimised using a Zend
Engine. The central server 10 is linked to a central
database structure 20 which, in the preferred
embodiment, includes a plurality of MYSQL databases. A
plurality of files, "cookies" and other programs, as
25 set out below, are loaded onto the central server 10.
Remote access to the central server 10 is secured with
a first fire wall 30.

30 In use, and as will be understood by those skilled in the art, one or more of a plurality of clients 40, 42, 44, 46, 48 is able to access the central server 10 via the Internet. Each of the clients 40-48 is typically a personal computer with web browsing software (such as Microsoft^(R) Internet Explorer^(TM) or Netscape Navigator^(TM)).

35 The central server 10 is also connected to a plurality of transaction servers 50, 52, 54, 56, 58 through a second firewall 60. Each of the transaction

25

35

supplier.

As will be explained in further detail below, a plurality of transaction servers 50-58 is necessary because of the virtually limitless number of permutations of server and database which different suppliers may use. Computer-based inventory databases have been available for many years, and both the hardware and software necessary to allow connection to, say, a simple system using a flat database structure will be dramatically different to the software and hardware necessary to allow connection with interrogation of a modern LAN with information stored on a Oracle^(TM) database. The algorithms and techniques employed by the system of Figure 1 to optimise access to all of the various supplier databases 110-120 from the single, central server 10 will be described below.

Having described the presently preferred hardware in the system of Figure 1, the method of obtaining building/construction material information at the remote clients 40-48, from either the central database structure 20 or one of the plurality of supplier databases 110-120 will now be described.

Suppliers of building/construction materials
25 access the central server 10, typically via a private
line connection 130-136. For example, supplier 1 may
connect to the central server 10 via private line
connection 130, to access his own, dedicated, central
database within the central database structure 20.
30 Supplier 1 has full control over his own dedicated
central database at the central database structure 20
with password protection. Each of the different
suppliers' central databases, resident in the central
database structure 20, is completely separate from
35 each other supplier's dedicated central database
therein, for security purposes. Supplier 1, for
example, might access his own central database in the

5

10

25

5

10

20

30

The file representing the shopping cart is checked by a small program, running on the central server 10, each hour and any such files which have not been altered for two weeks are deleted to free up space on the local database structure 20. Trade account information is, by contrast, maintained for several months before being deleted. Trade account information is highly sensitive and so is encrypted when stored in the central database structure. Currently, the Blowfish^(TM) algorithm is preferred although the specific encryption algorithm is stored in a library and may therefore be readily upgraded as appropriate.

Once a potential customer is successfully logged onto the server, he is presented with a menu such as is shown upon the left-hand side of Figure 2. This menu, labelled 'Menu 1', is the top level menu from which a selection of general categories of building/construction material are available. The general categories for this application are selected in accordance with architectural considerations, and more specifically, the logical sequence in which materials are typically required for building projects.

In the example in Figure 2, the user selects the general category 'Concrete Work' and, using his mouse, clicks upon the '+' adjacent to the words 'Concrete Work'. This opens the next branch on the tree of the menu structure, and lists a plurality of sub-categories, such as 'Cements & Aggregates', 'Concrete Admixtures' and so forth, as shown in Figure 2, Menu 2. The sequence continues with the user selecting the desired sub-category to open a third menu, Menu 3, with further, yet more specific categories of materials such as 'Portland Cements' being offered. Once a '.' is indicated next to a line of identifying text, it indicates that that is the lowest level of

categorisation of the product. Thus, in Menu 3, no further sub-divisions of 'High Alumina Cement' are available. Finally in Figure 2, the user selects 'Portland Cements' from Menu 3 to display the various types of Portland Cement available, namely 'Ordinary Portland 25 Kg', 'Masonry Cement 25 Kg', 'White Cement 25 Kg', or 'Small Bag 3 Kg'.

Having identified the specific product of interest by following through the menu structure to the lowest branch, the user is next invited to identify a limited number of suppliers from whom quotes for that product are desired. In one embodiment, the user may be invited to specify the suppliers by name. In a second embodiment, the user is instead requested to identify the geographical location which is of interest (for example, any suppliers within a five mile radius of the building/construction work to be carried out). By default, five suppliers are chosen, as this has been found to provide an optimum compromise between speed of supply of information to the user and a suitable range of quotes.

Once the number of suppliers has been determined, the product and price as supplied from the selected suppliers to the central database structure 20 is displayed to the user. In one embodiment, each of the various criteria supplied to the database is displayed and the user selects which he wishes to purchase on the basis of whichever criterion he chooses. For example, the user may see a list of ordinary Portland cement in supplier order, with an indication of the price per bag, delivery time, delivery cost, availability and so forth all displayed. In the preferred embodiment, however, and as shown in Figure 3, the available products are displayed in price order with the cheapest first. Here, it is seen that supplier 2 is able to offer a 25 Kg bag of

Ordinary Portland Cement at a lower price than the other suppliers. It will also be noted that the inventory code, input to the central database structure 20 by supplier 2, is displayed as well.

5 The user next adds the chosen product from the selected supplier to his shopping cart file by inserting the quantity of bags (in this case) which he wishes to purchase in the box 200 and then clicking on the 'basket' icon 210 (Figure 3). If further
10 information on a product is required, then the user may select the 'I' icon 215. The user may add further items to his shopping cart by reverting to the menu once more and collapsing it if necessary depending upon the category of the product he is looking for.
15 The same procedure for purchasing other materials is then repeated.

Figure 4 shows the contents of a user's shopping cart having chosen to purchase three products. It will be seen that the shopping cart is displayed in
20 supplier order, with each material itemised together with its price. Once all items of interest have been added to the shopping cart, the 'check-out' icon towards the bottom of the screen in Figure 4 is selected, which opens a further dialogue screen on the
25 client 40, as shown in Figure 5a. The customer enters an invoice and a delivery address, and selects the preferred delivery date.

As previously explained, one of the two files stored in the central database structure 20 for a
30 particular user relates that user's name to trade information. Thus, the central server 10 is able to advise the customer, at the remote client, that he has trade accounts with, in the present example, supplier 1 and supplier 3, and this is shown in the centre of
35 Figure 5a. The customer then has the option either to pay on account, or to pay by entering credit card details as shown at the bottom of Figure 5a.

5

25

30

level. These can be expanded or contracted by the central server administrator as appropriate. To achieve this rapid navigation, the menus themselves, along with the contents of the central database structure 20 relating to the products and their suppliers, are sent as a zipped Java applet, preferably compatible with Java Version 1.1.4. To simplify programming and maintenance, the menu structure is written incorporating Object Oriented techniques. Each object is a separate file so that the compiled menu is in fact, in the preferred embodiments, seven separate files, one of which (the database) is potentially extremely large (certainly in excess of 100 KB). In order to reduce the download time between the client and server of these files, Java JAR technology is employed. This groups multiple files into a single file and at the same time compresses them using a "zip" algorithm. Using this technique, the complete menu system is available to be downloaded from the central server 10 to one of the remote clients as a single 40 KB file. This file also contains suitable graphics for the menus.

Traditionally, when building a "shopping cart" for a web site, Object Orientated Programming techniques are used, usually because the code thus produced is relatively easy to follow. Once a potential customer has logged onto the central server 10 from a remote client, most subsequent actions at the central server will require access to the shopping cart file, which is stored at the central database structure 20 as explained above. The shopping cart file needs to be read and sorted once accessed. The traditional approach, as a customer browses around a web site, is to place items selected for purchase and place them into an object.

The drawback with this technique is that it is relatively slow to execute, because of the length of

5

10

15

25

10

15

25

35

separately connected to the central server 10 via ten separate remote clients, then ten copies of that PHP program will be running. Each individual copy of the PHP program may be streamlined for the specific user's requirements. Thus, for example, if a user wishes to obtain a quote from supplier 1, supplier 3 and supplier 4, the program, when executed, loads the required software to connect to supplier servers 90, 94 and 96, and only to these servers. At the same time, another user's PHP program, running on a separate client, may only wish to connect to supplier servers for supplier 2 and supplier 4, and thus will have different requirements. PHP is favoured over, say Active Server Pages (ASP) because it is more flexible in terms of the databases to which it may connect. It is also an order of magnitude faster.

20 The central server 10 maintains three separate libraries for each supplier, one to obtain a quote, one to check stock, and one actually to place an order. Thus, each program is streamlined in accordance with the connection requirements to the appropriate supplier servers, with the complexity of the program increasing only with the complexity demanded by the user.

25 It is for this reason that the information
supplied to a user at the remote client defaults to
five suppliers for optimised searching. It has been
discovered that, once it becomes necessary to connect
via the central server to more than five supplier
30 servers, the system begins to slow down. It will be
understood that the system does not preclude access to
more than five supplier serves at once, but that this
does introduce noticeable delays.

35 Once the required request for connection to the
suppliers' databases has been made by the remote
client and the resultant page of information has been
received at the remote client (all of this occurring

5 The plurality of transaction servers 50-58, local
to the central server 10, are provided to prevent
malicious attacks in the form of malicious multiple
requests to the various suppliers leading to denial of
service. Without some form of precaution, it would
10 otherwise be possible physically to prevent a supplier
from taking orders, either via the central server 10
or indeed from direct contact by telephone or the
like.

The central server 10 is programmed to monitor traffic between the intermediary and transaction servers, so that, if necessary, requests to a particular supplier's server may be blocked if that server is experiencing difficulty with current demand levels. In such a situation, that particular supplier

5

10

20

35

re

10

15

20

35

provide information accessible from the central database structure 20, he must enter information regarding each product into the correct category himself, and the database structure then stores the product in the appropriate pocket. Preferably, a category structure exists, so that the supplier is prompted by the central server with a menu similar to that shown in Figure 2 to help him categorize his products correctly.

10 This process only needs to be carried out whilst
the supplier is initially setting up his database on
the central database structure 20, and if he
subsequently wishes to add new products to the list of
those products he offers. Products about which
15 information has been stored already are given a
product ID that is unique at least for their supplier.
The product ID allows the category structure to be
maintained even when there is no data stored in it,
and to allow prices to be updated easily.

20 Although one specific, preferred embodiment of
the invention has been described, it will be
understood that various modifications and additions to
the system may be contemplated without departing from
the scope of invention, which is defined in the
25 attached claims.

For example, rather than searching via the menu structure, the data forwarded to the web browser of the remote client may be searched using a keyword search rather than drilling down through menus. Means 30 for permitting data entry to carry out a keyword search are shown towards the top of Figure 3.

Furthermore, in addition to manual updating of the central database structure 20 by the various suppliers, the system may be configured automatically to connect to suppliers' servers, using the preferred structure of transaction and intermediary servers, to permit that particularly supplier's information stored

in the central database to be updated without manual
input being necessary. Typically, the server would
make this connection overnight whilst the supplier
himself is unlikely to be placing much load on the
5 supplier server.

CLAIMS:

1. A method of facilitating the purchase of building/construction materials, comprising the steps of:

storing on data storage means, for each of a plurality of suppliers of building/construction materials, at least one purchasing parameter set including at least one purchasing parameter selected from the list comprising availability, physical proximity, delivery time, and price, and relating to one or more specific building/construction materials;

accessing, from a remote location, the said data storage means, via a central server in communication with the said data storage means;

obtaining, at the remote location, an array of information including the or each purchasing parameter set supplied by the plurality of suppliers and relating to at least one of the specific materials; and

comparing, at the remote location, equivalent purchasing parameters, provided by different suppliers for a given specific material, and obtained from the data storage means via the central server, so as to allow purchase of that given specific material from the supplier or those suppliers for which one or more purchasing parameters in a purchasing parameter set are considered most favourable.

30 2. The method of claim 1, in which the data
storage means includes a database local to the central
server.

3. The method of claim 1 or claim 2, in which
35 the data storage means comprises a plurality of
separate databases, each of which is local to a
corresponding one of the plurality of suppliers, the

5

5

10

15

20

25

30

35

8

•

5

10

15

20

25

30

35

5

10

15

20

25

30

35

5

10

identifying the specific material for which the
said purchasing parameter set is to be obtained;

15

20

25

30

35

5

10

15

24. The system of claim 23, in which the data storage means is local to the central server.

25

26. The system of claim 25, in which the server has access to a library of software routines each of which is operable, when executed, to cause connection of the central server, via at least one of the transaction servers, to a respective one of the supplier servers to in turn allow access.

27. A computer program product comprising program elements which, when executed upon the central server, cause the method of any of claims 1 to 20 to be carried out.

28. A server loaded with the computer program product of claim 27.

29. A method of facilitating the purchase of building/construction materials substantially as herein described with reference to the accompanying drawings.

30. A computer system substantially as herein described with reference to and as shown in the accompanying drawings.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☒ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.